3. Verizon VA's Existing Structure Mix as Reflected in Its Engineering Survey Is Not Likely to Change in a Forward-Looking Environment and Is Less Costly than the Structure Mix that a New Entrant Would Be Forced to Construct.

Verizon VA's structure inputs (*i.e.*, the mix of aerial, buried, and underground plant assumed for the forward-looking network) were based on an extensive survey that Verizon's engineers performed. Petitioners suggest that the Commission should reject Verizon VA's structure mix — which reflects the structure that has been implemented to account for Virginia terrain and geography and the various local requirements regarding rights-of-way and other concerns — and adopt instead the arbitrary assumptions used in the MSM. As Verizon VA has explained, Verizon VA's structure mix assumptions are eminently reasonable and are clearly the only reliable evidence before the Commission in these proceedings. (VZ-VA Br. at 100-03.)

AT&T/WorldCom claim that "the outside plant mix in Verizon's cost study is nothing more than a grab-bag of guesses by independent Verizon employees about which structure would be used for whatever cable Verizon happened to have in its planning pipeline approximately seven or eight years ago." (AT&T/WCom Br. at 170.) But as Verizon VA explained, to complete the survey, "Verizon's engineers consulted various detailed records such as plats (which show the location, size, and length of each cable), feeder route schematics, outside plant maps, and other documents containing detailed information about Verizon's outside plant facilities." (VZ-VA Ex. 122 at 60.) AT&T/WorldCom's primary criticism of the survey appears to be that it sought information about predominant structure types in each ultimate allocation area (UAA) rather than identification of the precise structure used for every single foot of cable throughout every single UAA. (AT&T/WCom Br. at 169-70.) But given the extraordinary cost that Verizon VA would have had to incur to measure every foot of every cable throughout the

network, the engineering survey used an inherently reasonable method of identifying the relative mix of different structures within the network.

Petitioners' criticism of the survey's use of buried cable as a default value if an engineer did not specify a predominant structure type rings similarly hollow. (AT&T/WCom Br. at 170.) As Verizon VA has explained, this default value "rarely had to be assumed, because the overwhelming majority of engineers did in fact specify the predominant structure type for each UAA." (VZ-VA Ex. 122 at 70.) Even in the rare instances in which the default value might have been used, this assumption was quite reasonable given that "most new developments do in fact require buried distribution cable." (VZ-VA Ex. 122 at 70.)

At the same time as they argue that Verizon VA's survey defaulted to an assumption of buried cable, Petitioners argue that Verizon VA's structure mix includes too much underground feeder and distribution cable. (AT&T/WCom Br. at 170-73.) However, the data Verizon VA used in its studies is consistent with Petitioners' general position that underground structure is and should be used most frequently in denser areas. (AT&T/WCom Br. at 171; Tr. at 4564.) And underground cable may also be more cost-effective even in less dense areas, especially if the cable is placed under paved ground, because with underground cable, additional cable can be installed in spare ducts without the need for subsequent trenching or restoration work. Mr. Riolo does not make any attempt to account for this or any of the other considerations that dictate cable placement decisions in the real world. (VZ-VA Br. at 83-84.)

Finally, Petitioners argue that Verizon VA has not demonstrated that its existing outside plant mix would "remain unchanged on a going-forward basis." (AT&T/WCom Br. at 169.) To the contrary, Verizon VA has explained that "network characteristics [such as structure mix] are not likely to change" over time, because the existing structure and routes are efficient and

appropriately designed for the Virginia network. (VA-VA Ex. 122 at 61-62 (emphasis added).) Any minor changes in one or two routes to reflect some efficiency that has developed since the original routes were built would have a negligible impact on the network as a whole. (*See* VZ-VA Br. at 83-84.) Moreover, Verizon VA's choice to use its existing network characteristics is clearly the most efficient approach in this instance. (Tr. at 2946 (Shelanski).) It would be incredibly inefficient to undertake a wholesale change of loop routes or structures. If a new carrier really were required to build an entirely new network using all new routes, the costs would be so high that they clearly would exert no downward pressure on Verizon VA's own costs.[59/] In this instance, of course, Petitioners' application of their scorched-node approach is highly contradictory: apparently, costs may reflect only any alleged efficiencies that would be available in the rebuilt network, but none of the additional costs. Verizon VA's approach is far more sensible and consistent.[60/]

4. AT&T/WorldCom Have Provided No Reliable Basis for Disregarding Verizon's Forward-Looking, Virginia-Specific Cable and Structure Investment Data.

The forward-looking cable and structure investment inputs used in Verizon VA's studies are based on Verizon VA's experience purchasing and installing cable in Virginia over several years. AT&T/WorldCom propose numerous changes to these inputs, each one based on the

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[59/] Among other things, a carrier building Verizon VA's network today would incur higher costs than Verizon VA assumes — including the costs of complying with new municipal regulations governing structure type and rights-of-way. (VZ-VA Br. at 85.)

[60/] Indeed, Petitioners' proposed structure mix values are inconsistent with their own scorched-node theory. For example, Petitioners assume that 35% to 85% of all distribution cable would be placed on poles even though a new entrant would be required to place virtually all of its new cable below ground (in either conduit or trenches). (Tr. at 4417 (Murphy); VZ-VA Ex. 122 at 70.)

contention that somehow, costs *must* be lower. According to Petitioners, Verizon VA either must be misrepresenting the facts, since they are different from what Petitioners would like, or the facts are not relevant. Yet Petitioners have no support whatsoever for their conclusions, and their counterproposals are entirely unsubstantiated: they do not point to one shred of evidence that might support any finding that the lower costs they propose are plausible or attainable in the real world. AT&T/WorldCom certainly have provided no data from their own cable purchases or structure investment that might demonstrate that different costs are in fact possible.

a) VRUC Cable Investment Data

As Verizon VA has explained, the cable investment data used in its studies was drawn from Verizon's Vintage Retirement Unit Cost (VRUC) and is the most reliable starting point for determining forward-looking cable investment. Petitioners in their brief resort to suggesting that VRUC data is not real but the product of inaccurate "estimates." (AT&T/WCom Br. at 132.) AT&T/WorldCom simply ignore the record testimony of Verizon VA's witnesses that VRUC data is developed from actual, Virginia-specific cable installation projects in a given year (VZ-VA Ex. 122 at 86-87; Tr. at 4263-67 (Sanford)). In essence, Petitioners, with no basis whatsoever, are doing nothing more than inappropriately questioning the candor of Verizon VA's witnesses.

Petitioners point to standard assumptions that Verizon VA used to assign the total VRUC costs in a given year to the different cable sizes as evidence that the database must be fictional. (AT&T/WCom Br. at 132.) But neither the underlying data nor the result of the cost apportioning process is "fictional." It is virtually impossible to track cable investments by cable

size;[61] Verizon accordingly uses standard assumptions, based on an "extensive analysis of the relative costs of installing different sizes of cable," to apportion its total costs among cable sizes purchased in the relevant year. (VZ-VA Ex. 122 at 89-90; *see also* Tr. at 4265-66 (Sanford).) The result is entirely reasonable: VRUC data shows the expected patterns among cable prices. Moreover, in the final analysis, when the VRUC-derived prices for all the cable priced in a given year are considered, they produce the correct total investment in cable for that year. (*See* VZ-VA Ex. 122 at 92; Tr. at 4266 (Sanford).)

Because Verizon VA's VRUC prices reflect the cost of actual cable installation projects in Virginia, they are the most reliable starting point for determining forward-looking cable investments. And despite their insistence that VRUC may be fictionalized, AT&T/WorldCom have not produced any evidence indicating that Verizon's method of calculating VRUC prices is unreasonable or distorts costs when those prices are used in Verizon VA's UNE cost models. Nor have they provided any of their own data, or any third party data, to suggest that the investment data in VRUC is inaccurate or unusually high. Although both AT&T and WorldCom unquestionably have considerable experience installing cable all across this country, they clearly have no data of their own – or at minimum, have introduced none – that would support any of these conclusions.

Nor have Petitioners supported their argument that the Commission should isolate and disregard Verizon VA's 1998 VRUC data when determining forward-looking cable investment. Indeed, AT&T/WorldCom's argument that this data is "entirely aberrational," and that

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[61] This is due to the fact that certain activities, such as splicing, cannot be accounted for by cable size because they may involve multiple cable sizes at the same time. (VZ-VA Ex. 122 at 87, 87 n.77; Tr. at 4265-66 (Sanford).)

"[e]limination of [this] outlier data yields more accurate cable costs" (AT&T/WCom Br. at 132) is incorrect. While the 1998 VRUC cable prices are, in a number of cases, higher than the data from 1997 or 1999,[62/] this does not make 1998 data aberrational and the 1997 and 1999 data the more reasonable benchmark. As Verizon VA has explained, cable investments (and, consequently, VRUC installed-cable prices) can vary considerably from year to year both because of the relative complexity of the installation projects in any given year and because the Commission's accounting rules require Verizon to wait until cables are actually placed into service before placing the associated investments on Verizon's accounts. This accounting treatment can cause a time lag in data reporting that may create distortions in the cable investment accounted for in any given year.[63/] (VZ-VA Ex. 122 at 96-97; Tr. at 4264-65 (Sanford).) Thus, excluding 1998 VRUC data as Petitioners propose would distort forward-looking investments by potentially understating them: 1997 and 1999 might have been years in which simpler cable jobs were performed or years in which cable was purchased but not placed into service. Omitting the 1998 data would disregard the very real factors that cause VRUC cable prices to fluctuate, sometimes widely, from year to year. The proper approach is to

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62/ Though AT&T/WorldCom are quick to point out particular cable types and sizes for which 1998 prices are higher than 1997 prices, they fail to point out cable types and sizes that had *lower* prices in 1998 than in 1997. Mr. Baranowski's own worksheets show that the 1998 VRUC prices for aerial and underground fiber cable were lower than the 1997 prices. (*See* AT&T/WCom Ex. 12, Worksheet "Fiber.xls" in Restatement of VZ Cost Studies/VA Unbundled Loop/Common Inputs Development/Cable Investment.)

63/ Pursuant to these accounting requirements, in some cases cables placed in year one may not be reflected on Verizon's books until year two, thus producing a lower figure for cable prices in year one and a higher one in year two: averaging the two years thus would produce the more accurate price. (VZ-VA Ex. 122 at 92-95; Tr. at 4264-65 (Sanford).)

average cable prices across several years of data to account for this inherent variability. (VZ-VA Ex. 122 at 93-95; Tr. at 4266-67 (Sanford).)

b) Conduit Investments

In criticizing Verizon VA's conduit investment data, Petitioners again ignore various factors that cause conduit investments to fluctuate from year to year and seek to convince the Commission to focus only on a small slice of data from one year that appears, if viewed in the right light, to advance AT&T/WorldCom's efforts to manipulate Verizon VA's studies to produce lower costs. But again, there is no support in either the record or pure common sense for the approach proposed by Petitioners.

AT&T/WorldCom claim that "Verizon ignores incontrovertible evidence that the average installed cost of conduit per foot has declined as the amount of conduit has increased, thereby demonstrating economies of scale" that a new entrant could achieve when constructing a forward-looking network. (AT&T/WCom Br. at 181.) The basis for Petitioners' allegation is the fact that Verizon VA's data for 1998 shows the lowest average per foot conduit investment and coincidentally the installation of the largest quantity of conduit during a five-year period. (AT&T/WCom Ex. 12 at 41.) But there is little if any causal correlation in the real world between the quantity of conduit placed and the per foot cost. Indeed, as Verizon VA has explained, the primary cause of fluctuations in per foot conduit investments from year to year is not the amount placed, but the complexity of installation jobs in a given year. Factors such as the terrain and extent of necessary repaving and restoration work have a significant influence on the cost of installing conduit. Thus, the fluctuations in Verizon VA's average per foot conduit investment reflect the varying complexity of installation jobs from year to year – not the cost

savings Verizon VA was able to achieve by placing more or less conduit in a given year.[64] (VZ-VA Ex. 122 at 101-02.)

Indeed, even a cursory look at the per foot conduit investment data for the years 1996-2000 demonstrates the fallacy of AT&T/WorldCom's suggestion that Verizon VA enjoyed lower costs in 1998 solely as a result of laying the largest amount of conduit that year. For example, AT&T/WorldCom overlook the fact that Verizon VA's per foot conduit investment was *higher* in 1999 than in 2000, even though Verizon VA installed 26% more conduit in 1999. (VZ-VA Br. at 98 n.100.) Likewise, Verizon VA's total conduit investment in 1996 was higher than in 1999 or 2000, even though Verizon VA installed fewer miles of conduit in 1996 than it did in the other two years.[65] Clearly, factors other than the number the miles laid must account for these variations in conduit costs. Therefore, even if the relevant assumption were that all of Verizon VA's conduit were to be laid at once in the instantaneously rebuilt network, there is no reason to assume that this large amount of conduit would produce lower-per unit conduit costs. To the contrary, given that a total rebuild would include building in all of the conditions that are found within Verizon VA's network, including simpler and more complex construction jobs, terrain,

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[64] Despite the total absence of *any* evidence underlying *any* of their claims concerning conduit costs, AT&T/WorldCom complain that Verizon VA has not provided "empirical evidence demonstrating that such variables affected conduit costs." (AT&T/WCom Br. at 182.) Of course, both Petitioners no doubt lay their own conduit, and neither has introduced any evidence of their own to suggest that, in their experience, these factors do *not* influence conduit costs. In any event, if for some reason common sense alone is not sufficient to support a finding that these factors of course affect the total installed investment costs, Verizon VA presented sworn testimony on this point, thus providing the Commission with evidence that remains uncontroverted in these proceedings.

[65] The total conduit investment for each year is provided in VZ-VA Ex. 211, Worksheet 3.1 in VA Unbundled Loop Rev 011030/Common Inputs/3.1 Conduit Investment Unit Price.xls on CD#1 (Nov. 1, 2001).

etc., the only possible approach to conduit costing that would make sense under that assumption is to estimate an average conduit price based on the range of installation jobs that encompass many areas within Virginia. And this, of course, is precisely what Verizon VA has done.

c) Pole Investments

AT&T/WorldCom also contend that Verizon VA's pole investment inputs fail to "reflect the economies of scale the forward-looking entrant can attain in installing poles sufficient to meet total demand." (AT&T/WCom Br. at 183.) But in this case, because they cannot portray Verizon VA's pole investment data as even appearing to display such economies of scale, Petitioners simply ignore that data entirely.

In fact, Verizon VA's pole investment data squarely contradicts the notion that significant economies of scale exist. Despite the fact that the number of poles installed annually by Verizon VA during the period 1996-2000 fluctuated by more than 20% from year to year on two occasions, the per-pole investment data shows no correlation between the number of poles installed in a given year and the per unit investment. (*See* VZ-VA Ex. 211, Worksheet 2.1 in CA Unbundled Loop Rev 011030/Common Inputs/2.1 Pole Investments.xls on CD#1 (Nov. 1, 2001).) Thus, AT&T/WorldCom are left to rely on nothing more than the speculative assertion that "[p]ole installations in the forward-looking, scorched-node TELRIC environment would capture the efficiencies realized from sequential installation and minimization of mobilization and demobilization." (AT&T/WCom Br. at 183.) But as Verizon VA has explained, the installation of poles throughout the entire network postulated by AT&T/WorldCom would produce *higher* per-pole costs. This is not just speculation, but reality: as Mr. Gansert testified, when Verizon had to replace a large number of poles in a short period of time following an ice

storm, neither the poles nor the labor came cheaply. The size of the job raised rather than lowered costs, even though the poles "were put up quite sequentially." (Tr. at 4094.)

AT&T/WorldCom seek to dismiss Verizon's observed experience by arguing that Verizon's costs "include the costs of installing poles on a piecemeal bases and during emergencies."[66/] (AT&T/WCom Br. at 184.) But it is unclear why AT&T/WorldCom believe that the costs of building an enormous network in one fell swoop would not trigger costs quite akin to – or even substantially higher than – the costs of installing poles "during emergencies." Petitioners' instantaneous network certainly is no model of routine installation. And even if the efficient new entrant could engage in the "advance planning" AT&T/WorldCom tout (AT&T/WCom Br. at 184), this would not cause workers to work for lower wages, or convince manufacturers or retailers not to take advantage of the pressing, one-time demand for a huge number of poles, trucks, and the like. Especially since Petitioners do not believe in incremental network development, suppliers and contractors would have little incentive to provide the new entrant, an exclusively one-time customer, with attractive pricing opportunities.

Of course, it is in any event absurd to believe that the costs of Verizon VA's poles should be adjusted to reflect whatever the cost of installing a whole network's worth of poles might be – because in reality, no carrier would construct a network in that manner. Not only are the allegedly lower costs the product of pure conjecture and implausible, but the costs of that instantaneous total pole installation are utterly irrelevant from an economic standpoint. No

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66/ As Mr. Gansert noted, in fact, the vast majority of Verizon VA's pole installation jobs are part of the planned construction of the network, not emergency jobs, and even efficiently planned pole installation jobs may properly consist of installation of only one pole at a time. (Tr. at 4093, 4095-96.)

carrier would ever have to adjust its costs to compete with a carrier that deployed a network in that manner because such deployment is not and will never be done. Even in the allegedly hyper-efficient network of the future that Petitioners postulate, poles would be deployed over time and, if that network were actually to operate, it eventually would experience the need for some emergency pole replacement jobs. As Dr. Tardiff noted, "[e]ven the TELRIC company, as it unrolls over a period of years, is not only going to be installing brand new poles, but I imagine cars will run into their telephone poles too, hypothetically." (Tr. at 4097.) An economically relevant pole cost study should reflect the efficient costs of all the inevitable and necessary pole installations that would be required in a real, functioning network, including emergency installations, planned smaller jobs, and the like.

5. AT&T/WorldCom's Criticisms of Verizon VA's Utilization Factors Ignore the Realities of Operating a Network Efficiently to Meet Applicable Service Quality Standards.

Verizon VA's loop cost studies use utilization factors to spread the forward-looking costs of efficient, reasonable levels of spare capacity in the network across revenue-producing units of capacity. Far from being a mere reflection of the embedded network, as AT&T/WorldCom suggest (*see* AT&T/WCom Br. at 146), these utilization factors are the product of Verizon VA's experience applying efficient and sound engineering guidelines to serve Virginia customers. In most cases, Verizon VA's engineers determined that there was no reason to believe that utilization rates would change in a forward-looking environment. (VZ-VA Ex. 107 at 38-39.)

AT&T/WorldCom's first line of attack is the claim that, because the fills in Verizon VA's network are lower than the levels that would better serve Petitioners' end, Verizon VA's representation concerning the levels of fill in its network is "dubious at best," suggesting that Verizon has misrepresented and "understate[d] the fill in its embedded network."

(AT&T/WCom Br. at 148.) For example, they make the inflammatory assertion that Verizon VA's utilization factor "is undoubtedly not Verizon's actual fill." (AT&T/WCom Br. at 152.) To the extent Petitioners do seek to support that utterly inappropriate assertion, they rely on blatant misrepresentations of the record and completely unsupported speculation.

For example, one of AT&T/WorldCom's primary pieces of "evidence" that Verizon VA has misrepresented its levels of spare is their claim that Verizon VA's witness Mr. White "conducted a survey of [sic] survey of 7% of the feeder routes in Virginia and found that the average feeder utilization was 80%" — a number higher than the **[VERIZON VA PROPRIETARY BEGIN]** XXXX **[VERIZON VA PROPRIETARY END]** used in Verizon VA's loop cost studies. (AT&T/WCom Br. at 152 (citing Tr. at 4994-95, 5006-08 (White)); *see also* AT&T/WCom Br. at 159.) However, AT&T/WorldCom fail to mention that, because Mr. White's focus was on the removal of load coils to provide DSL loops, his survey dealt only with loops with feeder segments longer than 18,000, which are not in any way representative of all loops in Verizon VA's network. (Tr. at 5007-08.) There is no reason to believe that the utilization for this particular subset of loops is equal to the average fill for all loops; indeed, Mr. White noted that these particular loops are in fact likely to have higher than average fills.[67] (Tr. at 5008.)

There of course is no basis to question that Verizon VA has accurately represented the fill that it has observed, and that has remained relatively constant, in its own network. The only

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[67] Moreover, given that Verizon VA has nearly 4 million working lines (and an even greater number of total lines) in its network (VZ-VA Ex. 122 at 75), Petitioners well know that this survey of 59,000 feeder pairs did not relate to 7% of *all* of Verizon VA's feeder routes, as they claim, but to the fact that the *wire centers* where those 59,000 feeder pairs are located contain approximately 7% of the working access lines in Verizon VA's network. (*See* Tr. at 5008.)

valid question before the Commission is whether that level of spare is appropriate for use in the forward-looking TELRIC network — and the clear answer must be that it is. Verizon VA has presented ample testimony that its current utilization rates result from the application of sound and efficient engineering guidelines developed under the incentives of price cap regulation. (*See, e.g.*, VZ-VA Ex. 107 at 35-40, 100-16; VZ-VA Ex. 122 at 104-42.) These engineering guidelines reflect the experience of Verizon VA's engineers about the best ways to provide continuous, quality service at the least cost.[68/] As Verizon VA's witnesses have explained, if the Commission were to adopt higher utilization rates, the only way that Verizon VA could achieve those rates would be to abandon its engineering practices — which ultimately would cause service quality and timeliness to degrade, and repair and maintenance and installation costs to go up. (Tr. at 4574-75 (Gansert).)

Petitioners suggest that Verizon VA has not demonstrated that the absurdly high factors they propose "are insufficient." (AT&T/WCom Br. at 150.) But to the extent possible, Verizon VA *has* proved this negative: the efficient operation of the network over many years has produced utilization levels below those proposed by Petitioners, thus demonstrating the level of spare that is essential to such efficient operation. On the other hand, AT&T/WorldCom have presented no evidence other than the speculation of their witnesses that it would be in any way

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68/ Petitioners suggest that Verizon VA's fills are questionable because "GTE planning documents" allegedly "reveal target fill factors far higher than Verizon suggests is appropriate." (AT&T/WCom Br. at 148.) However, Petitioners' reliance on this document (AT&T Ex. 117) is misplaced. The GTE document applies to a service area that is significantly more rural that Verizon VA's service area and thus would appropriately have different engineering guidelines. Moreover, Petitioners cannot on the one hand take advantage of the lower operating expenses that Verizon VA's lower actual utilization rates produce and at the same time argue for the lower plant investment that the theoretically higher GTE target fills would produce.

possible to increase utilization in the network without increasing operating costs — for which they do not account — and/or decreasing service quality.[69/] Even AT&T/WorldCom's witness Mr. Riolo admitted, when questioned by the Commission's staff, that he was unaware of any local exchange network that operated with the average utilization factors that AT&T/WorldCom have proposed. (Tr. at 4513-15.)

Nor is there anything to the primary criticism that AT&T/WorldCom raise with respect to the use of Verizon VA's utilization factors. Their argument, offered in several variations, is that Verizon VA's utilization factors include large amounts of spare capacity that will eventually be used to serve future demand and that today's customers should not bear the costs of that spare capacity through UNE rates.[70/] (*See, e.g.*, AT&T/WCom Br. at 146.) As Verizon VA explained in detail in its initial brief, however, this criticism is fundamentally flawed. (VZ-VA Br. at 106-09.) First, spare capacity in the network is not determined solely (or even primarily) by the need to serve future demand. Verizon VA's witnesses have testified at great length about a variety of other factors — including administrative and operational needs, customer churn, demand

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69/ For example, AT&T/WorldCom speculate that Verizon VA's existing network has "numerous feeder routes and other plant built to accommodate future growth that did not ultimately materialize." (AT&T/WCom Br. at 148.) However, AT&T/WorldCom have not identified even one example of such feeder routes or any "other plant."

70/ AT&T/WorldCom also argue that Verizon VA determined utilization for its cost studies differently from how its engineers determine utilization in managing the operation of the network, and that Verizon VA should have used the engineering definition of fill. (AT&T/WCom Br. at 150-51.) Petitioners are wrong. As Verizon VA has explained, its engineers consider facilities "spare" only if they are readily available to provide service — and thus treat assigned or defective facilities as "working" or utilized and *not* spare. But this does not mean that, for example, defective facilities are available to generate *revenue*, which is the only relevant definition of "working" versus spare capacity in a cost study. (VZ-VA Ex. 122 at 115-17; Tr. at 4511 (Gansert); VZ-VA Br. at 103-09.)

fluctuations, breakage, and the need to satisfy service quality obligations in Virginia — that are very current operational realities and contribute to the level of spare capacity in the network. (*See, e.g.*, VZ-VA Ex. 107 at 34-40, 100-16; VZ-VA Ex. 122 at 140-47.) Indeed, for copper distribution cable and fiber cable, the level of spare capacity in the network has relatively little to do with accommodating future demand growth. (VZ-VA Ex. 107 at 108-15; VZ-VA Ex. 122 at 118-24, 130-34.) Thus, there is simply no merit to the contention that the spare capacity reflected in Verizon VA's utilization factors for these facilities is primarily intended to serve future demand.[71/]

Second, there is no question that current customers should pay for the spare capacity in the network. It is the presence of such spare that enabled those customers to obtain, and ensures that they can continue to obtain, the quality and timely service they order. Thus, maintaining reasonable levels of spare capacity in the network is a current cost of operating the network. AT&T/WorldCom's argument that today's spare capacity will "get used after it was built" (AT&T/WCom Br. at 150) simply fails to comprehend this fact. The spare capacity in an individual facility might "get used," but fill factors do not represent the spare in an individual facility, which obviously may be lower or higher than the average fills. The amount of spare across the network as a whole does not "get used" because it remains fairly constant over time: new spare capacity is continuously added to the network as facilities within the network reach

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71/ AT&T/WorldCom also claim that "Verizon charges present customers for capacity that will be used by future customers and then *also* charges future customers for that capacity." (AT&T/WCom Br. at 149.) But as Verizon VA has explained, current ratepayers do not even pay for the full installation and operating costs of the facilities that are used to provide their service, much less the full installation and operating costs of spare facilities. They pay only for using a share of capacity on the network during the period in which they receive service. (VZ-VA Br. at 106-09.)

their relief trigger points, customers cancel service, and new developments are built. (VZ-VA Ex. 122 at 106, 117; Tr. at 4341 (Sanford).) It is simply unclear what AT&T/WorldCom mean when they suggest that this constant level of spare can be dismissed because the "additional" capacity that Verizon VA adds over time "is not modeled." (AT&T/WCom Br. at 150.) In fact, there is no "additional" capacity to model: the point is that today's level of spare capacity will be tomorrow's level of spare capacity and will not change over time, because the addition of spare capacity offsets future increases in demand. It is Petitioners, who account only for a fraction of the spare that a healthy and realistic network requires, that fail to "model" the costs that must be considered here.

Of course, what is particularly ironic is that the principle of including an allocated share of spare capacity costs in the rates for UNE loops and thus charging current customers for some share of a facility that they are not physically using (and will never get for free) does not change simply because one raises utilization factors, as AT&T/WorldCom propose. If Petitioners believe that customers indeed deserve "free porridge" (Tr. at 2935-36), it is unclear why they are willing to account for *any* spare in the network at all, which they clearly do.[72/].

a) Distribution Cable

Although Petitioners suggest that the proper utilization rate for distribution cable in the forward-looking network is 60%, they are unable to provide any support for this figure. They

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[72/] Using AT&T/WorldCom's (flawed) reasoning, AT&T/WorldCom's proposed distribution utilization factor of 60% would result in charging for the cost of approximately 1.67 pairs per UNE loop, or 3.33 pairs for two UNE loops. According to Mr. Pitkin, "all of [the] investments" modeled by the MSM, including spare capacity modeled through the MSM's target fill factors, are "divided by the demand to develop the loop costs." (Tr. at 4343; *see also* Tr. at 2934-35 (Tardiff noting that both cost models include spare drop wires).)

report that their own MSM does not achieve such a high utilization rate (Tr. at 4514), and Petitioners could not identify any network that operates on a statewide basis with such a high distribution utilization rate. (Tr. at 4514-15 (Riolo).)

AT&T/WorldCom contend that the "biggest problem" with Verizon VA's distribution fill is the "construction of distribution facilities to serve ultimate demand." (AT&T/WCom Br. at 155.) However, the practice of building to "ultimate demand" (which merely refers to allocating two or more distribution pairs per living unit in order to handle however many lines the residents reasonably will require) is an efficient practice that is not driven by the need to serve future demand but to accommodate the demand for service by today's customers without having to add capacity to fill particular orders. The number of lines that any particular living unit or group of living units will require is inherently uncertain, and the only efficient means of provisioning that demand when and as it arises is to engineer sufficient spare capacity in the distribution plant. (VZ-VA Ex. 107 at 114-15; VZ-VA Ex. 122 at 119-20; Tr. at 4116-17 (Gansert).)

Petitioners suggest that in a rebuilt network, the new entrant could abandon this well-established industry practice in areas where "demand for second lines has remained stable and is likely to remain so going forward;" in such areas, Petitioners contend, "[f]ar fewer pairs could be built while still providing sufficient capacity to serve any demand that did arise." (AT&T/WCom Br. at 153.) Though this would be nice in theory, Verizon VA's witnesses have testified, and common sense confirms, that "concentrations of customers requiring more than one line occur randomly and change over time" (VZ-VA Ex. 107 at 115), making it "completely unrealistic to expect that it would be possible to predict the demand for additional lines in individual neighborhoods based simply on past experience in those neighborhoods." (VZ-VA Ex. 122 at 120.) Because no carrier can be perfectly omniscient (VZ-VA Ex. 122 at 121),

Petitioners' hypothetical new entrant would likely soon find itself unable to meet sudden bursts in orders for second or third lines without experiencing the delays and inefficiently high costs associated with adding new distribution capacity. Assuming the instantaneous new network were not rebuilt yet again the next day, the new entrant would begin losing customers and receiving irate inquiries from the state regulatory commission, making it an unlikely source of price pressure on the incumbent.[73/]

Nor is there any basis for AT&T/WorldCom's suggestion that in the future, fewer distribution lines could be allocated per household because DSL should reduce demand for second lines. (AT&T/WCom Br. at 153-54.) In practice, however, as Mr. Gansert explained at the hearing, deployment of DSL has not had a significant impact on the demand for second lines. (Tr. at 4193-95.) Customers use additional lines for many reasons, including alarm monitoring services, additional voice lines, and fax lines. In short, AT&T/WorldCom have not shown any basis for the Commission to conclude that in the forward-looking network, the efficient entrant would abandon a practice that has been "established and universally followed . . . in the

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[73/] Petitioners' claim that Verizon VA's distribution utilization factor should be adjusted upward to account for an allegedly unreasonable number of defective pairs in Verizon VA's network (AT&T/WCom Br. at 154-55) is similarly unavailing. Petitioners' sole support for this claim is the unsubstantiated opinion of Mr. Riolo, who claims that there would be fewer than 1% defective pairs "when new plant is installed." (AT&T/WCom Ex. 12 at 47.) Mr. Riolo has not suggested that it would be possible to *maintain* a 1% level of defective pairs after constructing this hypothetical, new network over any meaningful period of time. As Mr. Gansert has explained, maintaining a network with sufficient (and efficient) levels of spare capacity allows a carrier to restore service quickly without the cost and delay of having to diagnose and repair a cable each time one becomes defective.

telephone industry by every efficient provider of local exchange service."[74] (Tr. at 4114 (Gansert).)

b) Copper Feeder

AT&T/WorldCom base their criticism of Verizon VA's utilization factor for copper feeder (and their support for their own proposed 80% factor) on the conclusory assertion that, based on Mr. Riolo's "experience," an 80% utilization factor for copper feeder is conservative. (AT&T/WCom Br. at 159.) Yet Mr. Riolo himself admitted that he has no experience observing network-wide fill. He conceded that he "could only speak to the operations that [he] was in charge of," which were limited to individual routes and not an entire, statewide network. (Tr. at 4514-15.) Not surprisingly, then, AT&T/WorldCom can point to no network that achieves a statewide feeder utilization rate of 80%, and their improper effort to distort Mr. White's testimony to suggest that Verizon VA's own feeder plant operates at this level (AT&T/WCom Br. at 159) was addressed above.

Petitioners' attempt to support their proposed copper feeder utilization factor through mathematics is similarly unpersuasive and simply fails to outweigh Verizon VA's extensive experience operating a network. Their analysis begins with the erroneous assumption that relief would be provided when a feeder route reaches 97% utilization. (AT&T/WCom Br. at 159-60.) In fact, however, Verizon VA has shown that proper engineering guidelines call for feeder relief

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[74] Petitioners also complain that Verizon VA's fill factor means that Verizon VA charges customers for a second spare distribution pair — and yet "does not provide the second pair for free but instead charges the same price for the second pair." (AT&T/WCom Br. at 156.) Verizon VA has addressed this argument above and in its initial brief; the argument is a complete distortion of the rates that any customers pay for any facilities they use on the network.

to be provided when utilization reaches 85% or 90% (depending on whether the plant is interfaced). (VZ-VA Ex. 122 at 128.) This practice preserves the mandatory margin of administrative spare and recognizes that it will often be more cost-effective to resolve impending feeder exhaust by installing new capacity rather than undertaking the expense of repair or rearrangement. (VZ-VA Ex. 122. at 128-30.) And while Petitioners assert that their factor accounts for churn and breakage (AT&T/WCom Br. at 160), they do nothing to demonstrate how this possibly can be true.[75/]

c) RT Common Equipment

Verizon VA has demonstrated that its utilization factor for RT common electronics is forward-looking and reflects efficient engineering practices.[76/] As Verizon VA has explained, breakage and customer churn produce spare capacity in addition to that needed for administrative spare and future demand.[77/] (VZ-VA Ex. 107 at 102-05; VZ-VA Ex. 122 at 137-40.)

[75/] Mr. Gansert testified that the churn rate ranges from 20% to 25% of lines each year. (Tr. at 4102.) Though the amount of time that each customer location remains vacant will vary, this high rate of churn demonstrates that churn has a significant effect on utilization.

[76/] Using the same utilization factor for RT common electronics and copper feeder is appropriate for a number of reasons. (VZ-VA Ex. 107 at 103-05; VZ-VA Ex. 122 at 139-40.) AT&T/WorldCom's contention that this approach is unreasonable (AT&T/WCom Br. at 164) conflicts with the approach in their own MSM, which uses the same target utilization factors for copper feeder cable and RT equipment. (*See* AT&T/WCom Br. at 157, 163 (noting the same range of target utilization factors for both copper feeder and RT common electronics).)

[77/] AT&T/WorldCom erroneously claim that "Verizon provides no explanation why any spare capacity is needed for administrative spare." (AT&T/WCom Br. at 164.) In fact, Verizon VA's specifically explained that "industry operating experience has established that DLC systems operate most efficiently with an administrative spare margin of 10% of installed RT common electronics capacity." (VZ-VA Ex. 122 at 137-38.)

AT&T/WorldCom's criticisms of Verizon VA's RT common equipment utilization factor simply ignore these critical factors.

AT&T/WorldCom's brief persists in their now discredited claim that Verizon VA's use of 224-line remote terminals as the minimum size in the network substantially decreases utilization in sparsely populated distribution areas (DAs) in Verizon VA's network with fewer than 50 lines.[78/] (AT&T/WCom Br. at 165.) First, as Verizon VA has explained, even if this were true (and it decidedly is not), there are so few of these DAs in Verizon VA's network that the overall impact on utilization would be negligible. (VZ-VA Ex. 122 at 72.) Second, and most important, Petitioners' contention is predicated on a complete misunderstanding of how the RT common equipment utilization factor is calculated and used within Verizon VA's loop cost model. As Mr. Sanford explicitly testified, Verizon VA used the 224-line RT to calculate per line DLC investment, not to calculate utilization. (Tr. at 4253.) Rather, Verizon VA derived its utilization factors from the real, operating network, in which Verizon VA does not and would not place a 224-line RT in a DA with only 50 working lines. In such DAs Verizon VA instead "would place a design suited to that 50 customer [DA]," and Verizon VA's utilization factors reflect the use of that facility. (Tr. at 4255 (Gansert).) Verizon VA's loop cost studies thus provide AT&T/WorldCom the benefit of the lower per unit price of a 224-line RT, without

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[78/] AT&T/WorldCom similarly claim that "customers would not be grouped together in a DA in such a manner that an entire 224-line shelf in the DA would be entirely empty" when a larger RT is expanded by adding a 224-line shelf. (AT&T/WCom Br. at 165.) To the contrary, once an RT is built with 224-line shelf units, the 224-line unit becomes the smallest and most efficient growth increment for that RT. Attempting to add capacity in smaller increments would require installation of an entirely separate RT, which is more costly than merely adding a 224-line shelf unit. (Tr. at 4247-48 (Gansert).) And while Petitioners make much of the average utilization of the 672-line RT that Verizon VA used as an example, the only relevant utilization is of all the RT equipment in the network as a whole, not an individual 672-line RT.

having to bear the cost of the additional spare capacity that would result from deploying the large RT in a small DA. (Tr. at 4253 (Sanford).)

d) RT Plug-ins

While their own MSM generally uses a lower target fill factor for RT plug-ins, AT&T/WorldCom argue that the utilization factor that must be used in Verizon VA's model is 90%. Petitioners claim that this 90% utilization rate "would easily be achievable on a forward-looking basis," based on their incorrect assertions that there is no need for any administrative spare capacity. (AT&T/WCom Br. at 162-63.) But as Verizon VA has explained, an administrative spare margin is necessary for RT plug-ins (as well as all network facilities) "to accommodate factors such as maintenance needs, internal network administrative needs, and unexpected demand peaks." (VZ-VA Ex. 107 at 35.) Verizon VA's engineering guidelines reflect this requirement, providing that critical exhaust for interfaced feeder facilities (including RT plug-ins) occurs at 90% utilization. (VZ-VA Ex. 122 at 135, Att. K at 9.) Verizon VA's utilization factor of 80% accounts for these additional needs and therefore represents a far more achievable and forward-looking utilization rate for RT plug-ins.[79/]

e) Fiber Strand

AT&T/WorldCom's proposed fiber strand utilization factor of 100% is entirely unrealistic and fails to account for the spare capacity produced by the 12-strand ribbon structure

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[79/] Although installing plug-ins is easier than installing other types of equipment (*e.g.*, RT shelf units), underprovisioning spare, and thus requiring excessive dispatches to add capacity, is nonetheless inefficient and costly. As Mr. Gansert testified, installing plug-ins "requires a [technician's] visit out to the site," and requires testing for a complete circuit after installation. (Tr. at 4228-29.) Provisioning sufficient spare allows Verizon VA to minimize the frequency with which it has to incur those costs.

of most fiber cables, as well as other factors that limit fiber strand utilization.[80] (VZ-VA Br. at 112-13; *see also* VZ-VA Ex. 107 at 108-11; VZ-VA Ex. 122 at 130-34.) AT&T/WorldCom's effort to support their 100% factor by purportedly demonstrating that Verizon plans to utilize all its spare fibers is simply a total misrepresentation of the record.[81] Although they claim that "Verizon has informed CLECs that it intends to use all spare fibers in its network" (and thus will no longer provision dark fiber), their alleged support is an incomplete transcript of testimony by an *SBC* employee before the Texas PUC. (AT&T/WCom Br. at 161; WCom Ex. 121.) Verizon VA objected to Petitioners' first attempt to use this document as evidence of SBC's plans on the grounds that Petitioners were calling for speculation about the meaning of an incomplete transcript (Tr. at 4238-41); Petitioners' latest effort to use this transcript as supposed evidence of Verizon's plans is even more absurd.

f) Conduit

Petitioners' arguments with respect to conduit utilization are entirely without merit. As with Verizon VA's other utilization factors, Petitioners' primary complaint is that Verizon VA's conduit utilization factor reflects too much spare capacity for future growth and that Verizon VA should include only one spare duct per conduit section. (AT&T/WCom Br. at 166-67.) For the

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[80] By failing to account for *any* breakage, Petitioners' proposed 100% utilization factor for Verizon VA's loop cost studies is completely inconsistent with Petitioners' latest defense of the MSM. Petitioners for the first time acknowledge that, though the MSM uses a target utilization factor of 100%, the 12-strand ribbon structure of fiber cable produces breakage and lowers the MSM's achieved fiber strand utilization rate. (AT&T/WCom Br. at 160.)

[81] At the same time as they argue (erroneously) that Verizon VA no longer intends to offer dark fiber, AT&T/WorldCom suggest that dark fiber rates recover the costs of spare fiber strand, so that fiber strand fill should be higher. (AT&T/WCom Br. at 161 n.145.) In fact, however, the spare capacity whose costs are recovered through the fiber strand utilization factor does *not* include dark fiber provided to CLECs. (Tr. at 4234-36 (Gansert).)

same reasons explained previously, Petitioners' arguments with respect to future demand growth are without merit, and Verizon VA has explained why AT&T/WorldCom are wrong to claim that there is only a limited need for spare conduit capacity. (VZ-VA Br. at 113-14; VZ-VA Ex. 122 at 141-44.) Petitioners also argue that Verizon VA inappropriately "calculates its utilization rate over a far different time period than is used to calculate the unit cost of conduit," but it is unclear why or how they contend this would impact UNE costs, or why they believe this argument is relevant to conduit utilization in particular.[82/] (AT&T/WCom Br. at 166.) Because both the per unit conduit investment and the conduit utilization factor reflect what Verizon VA would expect to experience in the same, forward-looking period, the use of both inputs in Verizon VA's loop cost studies does not distort forward-looking UNE prices.

6. Verizon VA's Distribution Cable Sizing Algorithm Produces Conservative, Forward-Looking Costs.

Verizon VA has demonstrated that its methodology for selecting distribution cable size overstates cable size and in turn produces conservative, lower UNE cost estimates. (VZ-VA Br. at 114-16; VZ-VA Ex. 122 at 97-101; Tr. at 4214-15 (Gansert).) Petitioners suggest that Verizon VA's cable sizing approach is "irrational" and that Verizon's position that the approach understates costs is "unproven." (AT&T/WCom Br. at 131-32.) But in fact, as Verizon VA explained, assessing costs as if there were one cable with enough pairs to serve working lines in the distribution area without applying the utilization factor understates per unit costs because, in the real world, multiple distribution cables would emerge from the SAI and taper to

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82/ Verizon VA used a similar approach to calculate per unit cable investment. (*See* VZ-VA Ex. 122 at 85-97.)

progressively smaller cables. Using the one, large cable thus produces lower per unit costs than would be possible in reality. (VZ-VA Ex. 122 at 99-100; Tr. at 4456-57 (Gansert).) Applying the utilization factor before selecting the cable size, as Petitioners propose, would merely exaggerate this understatement of per unit costs by producing an even larger cable size for each distribution area. Indeed, the MSM itself proves that Petitioners' proposal would understate costs; Mr. Pitkin acknowledged that the MSM recognizes that multiple distribution cables will emerge from each SAI to serve customers that are dispersed in different directions. (Tr. at 4458.)

B. Interoffice Transport (IOF) Costs

By acknowledging that they rely on Verizon VA's model for all interoffice transport ("IOF") dedicated transport costs, Petitioners implicitly concede the model's reliability. (AT&T/WCom Br. at 189.) The model changes AT&T/WorldCom advocate are unsupportable, demonstrate a total lack of familiarity with provisioning or designing for IOF demand, and undermine precisely those elements that make the model forward-looking and efficient.

1. Verizon VA's IOF Model Is Designed to Estimate the Most Efficient, Forward-Looking SONET Design.

Verizon VA's IOF model is based on a forward-looking SONET design that was informed by the expertise of Verizon engineers experienced in designing and provisioning IOF networks. Their goal was to design a SONET ring configuration that, on average, would produce maximally efficient results. This challenge entails balancing between larger rings, which allow for growth-demand flexibility and minimize the high costs of ring interconnections (*i.e.*, intermediate channel terminations), and smaller rings, which typically allow a greater number of circuits to enter and exit the ring at each node. (*See* VZ-VA Br. at 118; VZ-VA Ex. 122 at 152-